ampliTex®
Art. No. 5040
flax balanced weave (0°/90°) 300 gsm

Product description

Bidirectional fabric with fibers oriented at 0° and 90°, suitable for manufacturing fiber reinforced composite products with a high performance and a low environmental impact. ampliTex® 5040 has a very good drapability and is ideal for complex shapes. High laminate stiffness is obtained due to the low crimp twill 2/2 weave.

Fabric construction

Fibre type: Flax (EU)

Construction: 0°/90°, balanced twill 2/2 weave

Yarn tex: 300 TEX

Fabric weight : 300 gsm +/- 5%
150 gsm in each direction

Measurements

Standard width: 1000 mm

Standard roll length: 50 m

Performance advantage

Considering that glass fibers have a density of 2.6 kg/dm3 and a tensile modulus of 70 GPa, the flax ampliTex® 0°/90° 300 gsm can replace a 495 gsm glass fiber 0°/90° fabric to have the same stiffness in tension.

In compression, the performance of flax is a bit lower, thus the flax ampliTex® 0°/90° 300 gsm can replace a 410 gsm glass fiber 0°/90° fabric to have the same stiffness.

This fabric is ideal to be combined with the powerRibs fabrics 5019 and 5020, replacing a 600gsm carbon fiber layer with same performances in bending.

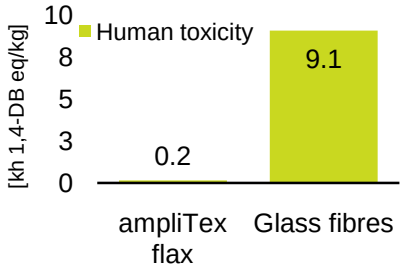
	Technical specifications	Dry fibres**	Composite *
Tensile	Modulus // to fibres	55 GPa	13.8 GPa
	Modulus ⊥ to fibres	5.4 GPa	-
	Strength // to fibres	540 MPa	129 MPa
	Strength ⊥ to fibres	-	-
	Strain to failure // to fibres	-	1.26 %
	Strain to failure ⊥ to fibres	-	-
Flexural	Modulus // to fibres	50 GPa	12.7GPa
	Modulus ⊥ to fibres	4.8 GPa	-
	Strength // to fibres	550 GPa	168 MPa
	Strength ⊥ to fibres	-	-
	Yield strength // to fibres	170 GPa	-
	Density	1350 kg/cm^3	

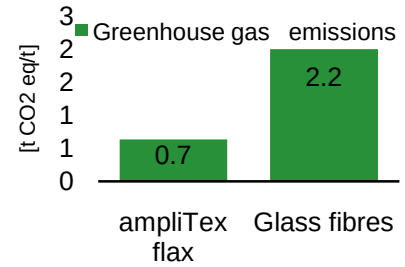
* Properties measured on samples with 5 layers aligned at 0°, manufactured in a press with 5 bars pressure (45% fiber weight, 40% fiber volume fraction), with Epoxy Araldite 5052
** Properties calculated from tests with UD fabrics with the same fibers

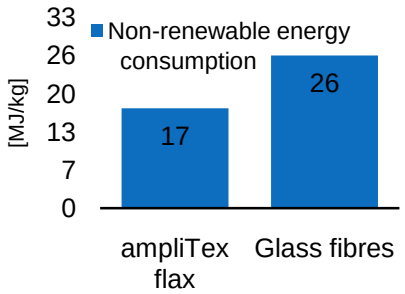
Ecological aspects

Grown in France and Belgium, flax used at Bcomp is a regional resource.

Production of flax has a negative global warming indicator because of the CO_2 sequestration by photosynthesis.







Processing guidelines

- Great compatibility with epoxy and polyester
- Near zero CTE, hence good processing compatibility with carbon fibres
- Compatible with infusion based processes (vacuum infusion, RTM), wet layup, bladder inflation moulding (BIM) and compression moulding
- Flax fibres always contain some humidity at ambient conditions. Some resins (especially polyesters) are sensitive to moisture and may badly polymerize or create bubbles. In that case, dry the fabrics before use (110°C for 15 minutes)
- Fibre weight fraction of 50% can be reached with process pressure > 5 bars. However, the fibres absorb a lot of resin when hand-laminating the fabric and it tends to look “dry” (unless too much resin is used) before pressure is applied. We recommend controlling the amount of adhesive used for laminating and impregnating it with 50 to 60% resin in weight. Excess resin comes out while pressing the fabric.

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